

REMARKS

At the time of the Office Action dated February 11, 2003, claims 1-19 were pending and rejected in this application. Claims 1, 13 and 17 have been cancelled, claims 2-3, 6, 11-12, 14-16 and 18 have been amended, and claim 20 has been added. Specifically, claim 14 has been placed in independent form by including all the limitations previously presented in claims 1 and 13, and consequently, claims 1 and 13 have been cancelled. Claim 16 has been amended to include the limitations presented in claims 14 and 17, and consequently, claim 17 has been cancelled. Claims 2-3, 6, 11-12, 15 and 18 have been amended to address dependency issues arising from the cancellation of claims 1, 13 and 17. Amended claim 19 and new claim 20 recite that first source/drain regions and second source/drain regions do not extend to an insulating layer. Applicants submit that the present Amendment does not generate any new matter issue.

In the third enumerated paragraph of the Office Action, the Examiner objected to claim 19 as a substantial duplicate of claim 18. By this amendment, claim 19 has been amended. Applicants, therefore, submit that the Examiner's objection to claim 19 is traversed.

Claims 1-10 and 16 are rejected under 35 U.S.C. § 102 for lack of novelty based upon Hata et al., U.S. Patent Publication No. 2001/0045561 (hereinafter Hata)

In the fifth enumerated paragraph of the Office Action, the Examiner asserted that Hata discloses a semiconductor device and method of making the same corresponding to that claimed.

Independent claims 14 and 16 have been amended to include limitations previously presented in claims 14 and 17, and the Examiner has already admitted that these limitations are not identically disclosed by Hata. Applicants, therefore, respectfully request the withdrawal of the imposed rejection under 35 U.S.C. § 102 for lack of novelty based upon Hata.

Claims 16-18 are rejected under 35 U.S.C. § 102 for lack of novelty based upon Bertin, U.S. Patent No. 5,909,400

In the sixth enumerated paragraph of the Office Action, the Examiner asserted that Bertin discloses a semiconductor device corresponding to that claimed. This rejection is respectfully traversed.

Independent claim 16 has been amended to include certain limitations presented in claim 14. Specifically, claim 16 now recites that a depth of the second source/drain regions is greater than a depth of the first source/drain regions. As also recited in claim 16, the second source/drain regions are formed in a second portion and the first source/drain regions are formed in a first region, and the depth of the second portion is greater than the depth of the first portion. These features are neither taught nor suggested by Bertin. Referring to Fig. 13 of Bertin, the depth of source drain regions in the thicker portion (i.e., the left side of Fig. 13) appears to be greater in thickness than the source drain regions in the thinner portion (i.e., the right side of Fig. 13). Thus, Bertin discloses exactly the opposite of what is recited in independent claim 16. Applicants, therefore, respectfully request the withdrawal of the imposed rejection under 35

Claims 1-15 are rejected under 35 U.S.C. § 103 for obviousness based upon Bertin
"in view of the [Examiner's] remarks"

In the eighth enumerated paragraph of the Office Action, the Examiner asserted that Bertin discloses the claimed invention or that the claimed invention would have been obvious in view of Bertin. This rejection is respectfully traversed.

With regard to claim 1, the Examiner stated the following:

Though Bertin partially grows the second portion of the layer 122 to form a thick portion (122+ 121) and a thinner portion (122) (figures 12,13) instead of first forming a thick layer and then partially removing a portion of the thick layer to form a thick portion and a thinner portion, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method of Bertin so that the same thick and thin portions (122+ 121) and (122), respectively, being formed by first growing a thick layer and then partially removing the thick layer, since such a modification would have involved a mere change in the method of forming the device, also it has been held that a mere reversal of the method of forming a thick and thin portions of a layer on a semiconductor device involves only routine skill in the art. (emphasis added)

The Examiner's use of the phrase "it has been held" implies that case law supports the Examiner's assertion that "a mere reversal of the method of forming a thick and thin portions of a layer on a semiconductor device involves only routine skill in the art." The Examiner, however, has failed to provide any citation for the purported supporting case law. Notwithstanding that the limitations of claim 1 have been added to claim 14 and claim 1 deleted, if the Examiner is to maintain the current rejection, the Examiner must provide a citation for this case law. Otherwise, Applicants must assume that such case law does not exist, and therefore, Applicants are free to disregard the Examiner's assertion as being without legal basis.

With regard to claims 3-10, the Examiner stated the following:

This statement is completely inconsistent with the Examiner's prior statement that "Bertin partially grows the second portion of the layer 122 to form a thick portion (122+ 121) and a thinner portion (122) (figures 12,13) instead of first forming a thick layer and then partially removing a portion of the thick layer to form a thick portion and a thinner portion," as reproduced above. Claims 3-7 are directed to the step of partially removing the first portion of the silicon layer, which, by the Examiner's own words, is admittedly not disclosed by Bertin. As such, how could the limitations recited in claims 3-7 be disclosed by Bertin? Furthermore, notwithstanding the Examiner's assertion that "these limitations are very well known in the art," the Examiner is required to provide a factual basis for such an assertion.

With regard to claims 11 and 12, the Examiner stated the following:

Regarding claims 11 and 12, Bertin discloses all the claimed limitations. Note that it is obvious to one of ordinary skill in the art that isolating features 123 could be formed either before or after the first portion of the silicon layer being partially removed, since it is obvious that any of such order of forming the isolating features would not make any change in the spirit and scope of the invention of Bertin.

The Examiner's statement that "it is obvious that any of such order of forming the isolating features would not make any change in the spirit and scope of the invention of Bertin" ignores whether or not the claimed invention is obvious. The "spirit and scope of the invention of Bertin" has no bearing on the obviousness of the claimed invention. Applicants also note that claims 11 and 12 are directed to the timing of the partial removal of the first portion, which the Examiner admits is not disclosed by Bertin. As such, the Examiner is compounding his previous failure to establish that the applied prior art teaches the partial removal of the first portion, by asserting, without any factual or legal basis, that it is obvious, in view of Bertin, to modify a

With regard to claim 14, now amended to be placed in independent form, the Examiner asserted the following:

Regarding claim 14, Bertin discloses the method wherein the first transistor includes first source drain regions and the second transistor includes second source drain regions formed, and a depth of the second source drain regions greater than a depth of the first source drain regions. See figures 6-8, 12, 13.

Initially, Applicants note that the Examiner's citation to Figs. 6-8 and 12-13 is problematic. Figs. 6-8 and Figs. 12-13 are directed to two different types of methods (see column 4, line 32 through column 5, line 17 for Figs. 6-8 and column 6, line 27 through column 7, line 9 for Figs. 12 and 13). As such, the Examiner cannot rely on the combined teachings of both these different methods because the Examiner has failed to provide a motivation to modify one with the other. Furthermore, as previously discussed, in Fig. 13 of Bertin, the depth of source/drain regions in the thicker portion (i.e., the left side of Fig. 13) appears to be greater in thickness than the source/drain regions in the thinner portion (i.e., the right side of Fig. 13). Thus, Bertin discloses exactly the opposite of what is recited in independent claim 16. Applicants, therefore, respectfully request the withdrawal of the imposed rejection under 35 U.S.C. § 102 for lack of novelty based upon Bertin.

Notwithstanding what Figs. 6-8 and 12-13 disclose with regard to relative thickness, Applicants refer the Examiner to M.P.E.P. § 2125, which states "PROPORTION OF FEATURES IN A DRAWING ARE NOT EVIDENCE OF ACTUAL PROPORTIONS WHEN DRAWINGS ARE NOT TO SCALE" (capitalization in original). As Bertin fails to state that the drawings are to scale, "it is well established that patent drawings do not define the precise proportions of the

on the issue."¹ In this regard, Bertin is completely silent as to the relative depths of any source drain regions. Thus, Figs. 6-8 or 12-13 cannot be relied upon to disclose the relative depths of the first source drain regions and the second source drain regions recited in claim 14.

As to the Examiner's statements with regard to claim 15, in which the Examiner pointed to Fig. 13 to disclose that the diffusivity of the second dopant into silicon is greater than the diffusivity of the first dopant into silicon, Applicants question how Fig. 13 can disclose which dopant has greater diffusivity. Even assuming arguendo that Fig. 13 discloses that the N dopant is deeper than the P dopant, the difference in depth is not necessarily a result of different diffusivity rates. For example, the N dopant could have been implanted into the silicon at higher energies, which increased the depth of penetration. As such, Fig. 13 cannot be used to inherently disclose the limitations recited in claim 15.

As the Examiner has not provided a proper motivation for one having ordinary skill in the art to modify Bertin to arrive at the claimed invention, Applicants respectfully submit that the Examiner has failed to establish a prima facie basis for the imposed rejection under 35 U.S.C. § 103 for obviousness. Applicants, therefore, solicit withdrawal of the imposed rejection of claims 2-12 and 14-15 under 35 U.S.C. § 103 based upon Bertin in view of the Examiner's comments.

Applicants have made every effort to present claims which distinguish over the prior art, and it is believed that all claims are in condition for allowance. However, Applicants invite the

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remarks. Applicants hereby respectfully request reconsideration and prompt allowance of the pending claims.

To the extent necessary, a petition for an extension of time under 37 C.F.R. § 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417, and please credit any excess fees to such deposit account.

Respectfully submitted,

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